ORIGINAL ARTICLE

Man's perception of the human papillomavirus infection – HPV

Percepção do homem em relação à infecção por papilomavírus humano – HPV

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ABSTRACT

Objective: to describe the quality of perception of man over the human papillomavirus infection in Aracaju, Sergipe. **Methods:** this was an observational and cross-sectional study, conducted through the use of questionnaires covering the knowledge of infection by the human papillomavirus (HPV) to two groups of individuals: the first one without any prior information about the subject; and the second one after receiving previous information. The first group was interviewed between February and May of 2012 and the second between April and June of 2013. The study included those who met the inclusion criteria and agreed to participate by signing the volunteer consent form. The results were analyzed using the SPSS software. The study was submitted to the Ethics Committee. **Results:** 200 subjects in the first group answered the questionnaires, while 90 subjects in the second group participated, including omitting some answers on various items in the questionnaire. Regarding the HPV concept and what diseases it causes, 42% in the first group demonstrated having the correct concept. This index increased to 74.6% in the second group. On the basis of knowledge about peniscopy, a significant difference was observed between subjects in the first and second groups; 93.5 and 92.5% in the first group were unaware of the concept and function, respectively. In the second group, 72.6 and 64.6% demonstrated knowledge, respectively. **Conclusion:** the quality of man's perception of HPV infection improved after attending educational lectures on the subject, although even after being taught, an important share of individuals showed no interest in answering questions about the matter.

Key words: Papillomaviridae; Communicable Diseases; Infection; Communicable Disease Prevention; Men; Perception.

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RESUMO

Objetivo: *descrever a qualidade da percepção do homem quanto à infecção pelo papilomavírus humano em Aracaju, Sergipe.* ***Métodos:*** *trata-se de estudo observacional, transversal, por intermédio da aplicação de questionários abrangendo o conhecimento sobre a infecção pelo vírus do papiloma humano (HPV) a dois grupos de indivíduos: o primeiro, sem algum esclarecimento prévio; e o segundo, após palestras prévias. O primeiro grupo foi entrevistado entre fevereiro e maio de 2012 e o segundo entre abril e junho de 2013. Foram incluídos no estudo os que atendiam aos critérios de inclusão e aceitaram participar da pesquisa a partir de assinatura no termo de consentimento livre e esclarecido. Os resultados obtidos foram analisados pelo programa SPSS. A pesquisa foi submetida ao Comitê de Ética.* ***Resultados:*** *no primeiro grupo, 200 sujeitos responderam aos questionários, enquanto no segundo 90 sujeitos participaram da pesquisa com a omissão de respostas em vários itens do questionário. A respeito do conceito do HPV e quais doenças ele provoca, 42% do primeiro grupo demonstraram conceito correto. Este índice aumentou para 74,6% no segundo grupo. Sobre o conhecimento e a função da peniscopia observou-se diferença importante entre os sujeitos do*

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primeiro e do segundo grupos, sendo que 93,5 e 92,5% no primeiro desconheciam a função e o conceito, respectivamente. E no segundo grupo, 72,6 e 64,6% demonstraram conhecimento, respectivamente. ***Conclusão****: a qualidade da percepção do homem sobre a infecção pelo HPV melhorou após ministração de palestras educativas acerca do tema, embora mesmo após serem orientados, importante parcela de indivíduos não demonstrou interesse em responder as perguntas sobre o assunto.*

Palavras-chave*: Papillomaviridae; Doenças Transmissíveis; Infecção; Prevenção de Doenças Transmissíveis; Homens; Percepção.*

INTRODUCTION

The human papillomavirus (HPV) is the most commonly diagnosed among sexually transmitted diseases. There are about 630 million people infected worldwide. Its overall prevalence varies between 9 and 13%, variable among men depending on the study methods, as well as differences between studied populations.[1]

HPV infection has been linked to cervical cancer as well as vagina, vulva, anus, and penis cancer.[2]

The human papillomavirus is species-specific; it has icosahedral shape, measures approximately 55 mm with 72 capsomeres, no envelope, and double-stranded circular DNA genome. It is present in benign tumors in its episomal form and, found in malignant neoplasias when integrated into the host cell chromosomes.[3]

Changes in sexual behavior in the last decades together with little information about HPV, especially in man, have caused the quick proliferation of this virus becoming the most frequent sexual transmitted disease.[4]

The risk factors for acquiring HPV infection are age, sexual activity, smoking, immunosuppression, pregnancy, and others. There is noticeable decline in prevalence with age, referring to epidemiological and transient aspects of lesions, probably by reducing exposure to new partners and developing immunity to certain types of viruses.[5]

Men act in the dynamics of transmission, increasing the chances of women to contract HPV and have cervical cancer; 99% of cervical cancers are due to this virus. Although less frequent, men can get cancer in the penis or anus due to HPV.[6]

The HPV infection can be expressed clinically as condyloma acuminata or warts in the genital area, easily noticeable by the infected individual. It may be subclinical when the associated lesions can only be diagnosed by colposcopy, or peniscopy and cytology because it is a latent infection diagnosed by the detection of virus DNA.[7]

There is an association between HPV infection and penile cancer in men in the order of 30.3%, mainly involving type 16 HPV, ranging between 15 and 46.3%. In non-invasive lesions such as cancer, the highest prevalence of HPV was noted.[8]

Compared to other subgroups, young men seem to have the least knowledge about HPV and unawareness about being able to spread the virus, which affects the female population; or they are at risk of having condyloma or cancer-related to HPV. Educational efforts toward HPV infection and its associated diseases to be known by the general population, focusing on young men, may be beneficial for both genders.[9]

Evidence of little knowledge about HPV was observed in patients with genital warts. There are no differences on knowledge about HPV among different gender and age strata.[10] Knowledge about morbidity rates and how to promote immunization are essential measures to prevent HPV infection.[11]

Although several studies have reported cases HPV infection in the penis, few address the knowledge and perception of men about this virus and what it can cause.[12] Some authors demonstrated that men have misconceptions or even do not know the availability of a vaccine.[13]

Although the perception and knowledge of the virus and diseases are not indicators that health will result from behavioral changes because there are several other social influences on this attitude, knowledge is the essential first step to the success of any health problem.[1]

This study evaluated the quality and quantity of information that men from Aracajú have about HPV.

METHODS

Type of study

This was an observational, cross-sectional study. It covers two types of men: the first interviewed without any prior information and the second interviewed after educational lectures on the subject. The groups were matched for age and socioeconomic status.

Study location and period

The study was conducted with two groups of men matched by age, between 15 and 60 years, with simi-

lar sociodemographic characteristics. One group responded to questionnaires without prior information about the subject and the other responded after attending lectures on HPV infection in men. The lecture was presented in 11 locations with the number of participants ranging between 15 and 20. The lectures' locations were at the Military Police Station, Fire Department in the Industrial District, Department of Revenue, Seventh-day Adventist Church in the Ponto Novo, Military Police Battalion Station, and the Folgás Company. The study period for the first group was between February and May of 2012 and for the second group between April and June of 2013. The first group had 200 recruited subjects and the second had 90.

Sample

In the first group, the sample calculation comprised 400 sexually active men between and ages of 15 and 60 years, randomly chosen.

According to the confidence interval of 95% (5% error), the sample size would be 384 individuals (gold standard – finite population ≈ 1,000,000). However, with losses due to improper questionnaire filling, this group included 200 responded questionnaires.

In the second group, the sample calculation comprised 200 men in sexual sexually active men between the ages of 15 and 60, randomly chosen.

According to the confidence interval of 95% (5% error), the sample size would be 190 individuals (gold standard – finite population ≈ 1,000,000). Out of the 190 men who attended the lecture, 90 completed the questionnaire and, of these, some did not respond to some of its items.

- **inclusion criteria:** in both groups all patients who agreed to freely participate were included. In the first group, those who agreed to answer the questionnaire; in the second group, those who attended the lecture about HPV in men and signed the free and informed consent form. Completed questionnaire;
- **exclusion criteria:** refusal to participate in the study. Unfilled questionnaires.

Research instrument

The same questionnaire was used for data collection in both groups, which focused on the characterization of the subject (socio epidemiological and sexual profile) and knowledge about HPV, totaling 25 questions.

The questions aimed to know the quality of perception of men in relation to HPV infection after being informed about the subject.

The questionnaire variables were: age, age at first sexual intercourse, how many partners had in life, condom use, DST history, having heard about HPV, concept about HPV, if men acquires HPV, if men transmit HPV, diseases caused by HPV, if knows any person who has HPV, if heard about peniscopy, if knows the purpose of peniscopy, if would submit to peniscopy, if has a primary partner, if partner follows-up on preventive care regularly, result of the last preventive care assessment in a partner, if partner's treatment leads to the other partner's treatment, alcoholism, smoking, penis hygiene, education level, and monthly income.

Data collection and statistics

The first group was given an initial explanation about participation in the study and confidentiality concerns. No explanations about the HPV infection was provided to prevent interference with their responses. Those who agreed to be interviewed signed a free and informed consent according to Resolution No. 196/96 of the National Health Council before answering the questionnaire.

In the second group, at the end of the lecture, an explanation of the questionnaire with questions on the subject to evaluate the quality of absorption of knowledge about HPV was provided. These participants were informed that their responses would be confidential; they signed a consent form authorizing the use of this information. The questionnaire was administered between 12 hours and one month after the lecture according to the availability of subjects. Those who agreed to be interviewed signed a free and informed consent according to Resolution No. 196/96 of the National Health Council before answering the questionnaire.

Data were organized and analyzed using the SPSS 20.0 program. Frequency distribution tables were generated, and variable association tests were conducted using the chi-square test.

Ethical aspects

After signing the free and informed consent, respecting the ethical and legal principles of Resolution No. 196/96, participants answered the questionnaire.

The study was submitted to the ethics committee in research and approved with the certificate number: 02891413.0.0000.5546.

The investigation did not cause embarrassment or physical damage to the subjects being studied; their identities and information written in the questionnaire were kept confidential.

RESULTS

Table 1 shows that most of the study participants in group 1 proceeded from the capital – 166 (83%); 170 (85%) had higher level of education; 101 (50.5%) had a monthly income of up to six minimum wages; 107 (53.5%) were 22 years old or less; 173 (83.5%) were non-smokers; 199 (99.5%) performed penis hygiene, and 126 (63%) used alcohol. In group 2, all proceeded from the region of the capital of the State of Sergipe; 54% had higher education level, 67% earned incomes up to six minimum wages, 77% were non-smokers, 52.4% had alcoholic habits, and 100% performed penis hygiene. It should be considered that these percentages were respective to respondents to the items asked.

Table 2 presents data on sexual behavior. In the first group, 120 (60%) used condoms; 198 (99%) had no history of sexually transmitted diseases (DST); 102 (51%) had a stable partner; 107 (53.5%) began sex life aged 15 or younger; and 99 (49.5%) had more than six partners. In the second group, 45.2% always used condoms, 91% had no history of DST; 92% had a steady partner; 88.6% of partners submitted to preventive examinations, 98.6% stated that the last exam of the partner was normal; 91.5% reported taking medication following the partner's doctor recommendation; 57.5% began sexual life after the age of 15; and 64.7% had up to six sexual partners in life. Consider that not all surveyed men answered all items.

Table 1 - Distribution of frequency of sociodemographic characteristics of study participants

Sociodemographic data	Group 1		Group 2	
	Absolute number	Relative number (%)	Absolute number	Relative number (%)
Origem				
Capital	166	83	90	100
Countryside	34	17	0	0
Total	*200*	*100*	*90*	*100*
Education				
Middle to High	30	15	36	46
College	170	85	41	54
Total	*200*	*100*	*77*	*100*
Income				
Up to six minimum wages	101	50.5	51	67
More than six minimum wages	99	49.5	25	33
Total	*200*	*100*	*76*	*100*
Smoking				
No	173	86.5	77	92
Yes	27	13.5	7	8
Total	*200*	*100*	*84*	*100*
Alcoholism				
No	74	37	41	47.6
Yes	126	63	45	52.4
Total	*200*	*100*	*86*	*100*
Penis hygiene				
No	1	0.5	0	0
Yes	199	99.5	86	100
Total	*200*	*100*	*86*	*100*

Table 2 - Distribution of frequency of behavioral and sexual data from the study participants

Sociodemographic data	Group 1		Group 2	
	Absolute number	Relative number (%)	Absolute number	Relative number (%)
Use of condom				
Never or rarely	80	40	46	54.8
Always	120	60	38	45.2
History of DST				
No	198	99	71	91
Yes	2	1	7	9
Steady partner				
No	98	49	7	8
Yes	102	51	80	91
Partner testing				
No	91	45.5	9	11.4
Yes	109	54.5	70	88.6
Last test				
Normal	196	98	72	98.6
Altered	4	2	70	88.6
Treated				
No	56	28	6	8.5
Yes	144	73	64	91.5
Start of sexual life				
Before 15 years old	107	53.5	31	42.5
After 15 years old	93	46.5	42	57.5
Number of partners				
Up to 6	101	50.5	44	64.7
More than 6	99	49.5	24	35.3

Table 3 - Characteristics of interviewed participants related to knowledge about HPV infection and diagnostics in the first and second study stages

Knowledge about HPV infection	Group 1		Group 2	
	Absolute number	Relative number (%)	Absolute number	Relative number (%)
HPV diseases				
I do not know or incorrect	143	71.5	14	23.7
Some disease but correct	57	28.5	45	76.3
Total	*200*	*100*	*59*	*100*
Knows someone with HPV?				
No	175	87.5	67	78
Yes	25	12.5	19	22
Total	*200*	*100*	*86*	*100*
Knows about peniscopy?				
No	185	92.5	20	27.4
Yes	15	7.5	53	72.6
Total	*200*	*100*	*73*	*100*
Knows the purpose of peniscopy?				
No	187	93.5	22	35.4
Yes	13	6.5	40	64.6
Total	*200*	*100*	*62*	*100*

Table 4 - Association between the correct or not knowledge about HPV and variables related to information, disease, and virus diagnostics

Group 1				Group 2			
Have heard about HPV	Concept about HPV		P: 0.001	Have heard about HPV	Concept about HPV		P: 0.030
	Incorrect	Correct	Total		Incorrect	Correct	Total
No	62 (31%)	5 (2.5%)	67 (33.5%)	No	0 (0.0%)	1(1.7%)	1 (1.7%)
Yes	49 (23%)	84 (42%)	133 (66.5%)	Yes	14 (23.7%)	44 (74.6%)	58 (98.3%)
Total	*111 (55.5%)*	*89 (44.5%)*	*200 (100%)*	*Total*	*14 (23.7%)*	*45 (76.3%)*	*59 (100%)*
Purpose of peniscopy	Concept about HPV		P: 0.059	Purpose of peniscopy	Concept about HPV		P: 0.061
	Incorrect	Correct	Total		Incorrect	Correct	Total
Incorrect	107 (53.5%)	80 (40%)	187 (93.5%)	Incorrect	4 (8.2%)	16(32.7%)	20 (40.8%)
Correct	4 (2%)	9 (4.5%)	13 (6.5%)	Correct	6 (12.2%)	23 (46.9%)	29 (59.2%)
Total	*111 (55.5%)*	*89 (44.5%)*	*200 (100%)*	*Total*	*10 (20.4%)*	*39 (79.6%)*	*49 (100%)*
Diseases caused by HPV	Concept about HPV		P: 0.001	Diseases caused by HPV	Concept about HPV		P: 0.042
	Incorrect	Correct	Total		Incorrect	Correct	Total
I do not know or incorrect	94 (47%)	49 (24.5%)	143 (71.5%)	I do not know or incorrect	1 (1.9%)	6 (11.3%)	7 (13.2%)
Correct disease	17 (8.5%)	40 (20%)	57 (28.5%)	Correct disease	11 (20.8%)	35 (66%)	46 (86.8%)
Total	*111 (55.5%)*	*89 (44.5%)*	*200 (100%)*	*Total*	*12 (22.6%)*	*41 (77.4%)*	*53 (100%)*

Simple random statistical test and cross table chi-square test.

Table 5 - Association between the variables 'would submit to peniscopy' and 'concept about HPV.'

Concept about HPV						
Would submit to peniscopy	Group 1			Group 2		
	Incorrect	Correct	Total	Incorrect	Correct	Total
No	107 (57,2%)	80 (42,8%)	187 (93,5%)	0	0	0
Yes	4 (30,8%)	79 (69,2%)	13 (6,5%)	13 (24,1%)	41 (75,9%)	54(100%)
Total	*111 (55,5%)*	*89 (44,5%)*	*200 (100%)*	*13 (24,1%)*	*41 (75,9%)*	*54 (100%)*

p = (0.059) p = (0.0189). Simple random statistical test and cross table chi-square test.

The variable defined as "knows individuals with HPV?" provided similar results, most responded not knowing, with values of 87.5 and 78% in the first and second group, respectively. On the knowledge and purpose of peniscopy, there was a sudden change from the first to the second stage; 93.5 and 92.5% in the first stage did not know the function or purpose of peniscopy, respectively. In the second stage, 72.6 and 64.6% knew what peniscopy is and its purpose, respectively.

Other results on the variables related to contracting (89 respondents) or transmitting (87 respondents) HPV showed that 100% said yes, men can acquire and transmit HPV. In the first stage of the study, 17.5% said that men do not acquire or transmit HPV.

Regarding the association between the variables "have heard about HPV" and "concept about HPV," it was observed that 42% of subjects have heard about the virus and had a proper view about it in the first group; this association occurred in 74.6% of subjects with significant association in the second group.

There was a borderline significant association in 4.5% of those who had a proper view of HPV and also knew about the purpose of peniscopy in the first group, however, in the second group, which was also of borderline significance, 46.9% had correct concepts about the two crossed variables.

In the first group, 20% of subjects had a proper view of HPV and knew some disease caused by HPV; in the second group, 66% of subjects were aware of this association, which was significant in both steps.

Only in the second group, all subjects who responded about "any concept about HPV" would submit to peniscopy.

The association between age and concept about HPV pointed out that 60.7% had a misconception about HPV and age below 22 years (p: 0.072) in the

first group without statistical significance. In the second group, 54.2% had a proper view of HPV and were under 40 years of age, with borderline significance (p: 0.052).

DISCUSSION

In the first group, 170 (85%) of men had high education level (complete/incomplete); and most had high education level in the second group; 60.2% were under 40 years of age; most with a good income level; and a few mentioned smoking. There were few men in the second group, more precisely 47.3%, who completed the questionnaire. Moreover, of those who completed it, some have not responded all items. The reason may be that, despite having attended the lecture, they did not sufficiently capture the information or were embarrassed to answer some questions.

Regarding the association between the variable "have heard of HPV" and having a proper view of HPV in the first group, 63.2% of those who had heard of HPV had a proper view of HPV; in the second group, 75.8% of men who had heard about HPV had a proper view of HPV. An educational intervention can significantly improve knowledge about HPV among medicine and psychology college students. The number of correct answers in this study increased from 45% before the educational intervention to 79% after the intervention.[14]

In the first group, 17.5% of men responded that men do not contract or transmit HPV; in the second group, 100% of those who responded the questionnaire knew that men can contract and transmit HPV. Men are the main link in the epidemiological chain of HPV[6] thus, their ignorance about the role as a transmitter and carrier is a risk factor for spreading this infection.

The crossing between two variables – a concept about HPV and which diseases are caused by HPV – revealed that 20% of men in the first group knew the correct concept about HPV and which diseases it can cause while 66% of subjects in the second group correctly answered these two questions. Low prevalence of knowledge and awareness about HPV were observed in DST patients in a clinic in Puerto Rico, however, among the minority who had some knowledge, that knowledge was significant and possibly due to educational information received at the clinic.[1]

Another variable crossing between statistically significant variables was observed in the question if men would submit to peniscopy and concept about HPV. This association, in the first group, showed that 6.3% of men who answered both questions would submit to peniscopy regardless of having the right or wrong concept about HPV while in the second group, 100% of men said they would submit to peniscopy, demonstrating that after learning through the lectures about the importance of peniscopy, all would be willing to undergo such examination. In the first group, only 7.5% knew about peniscopy and 6.5% knew about its purpose; in the second group, 72.6% of the subjects knew about peniscopy and 64.6% knew about its purpose. Peniscopy is essential for the detection of lesions that are invisible to the naked eye in asymptomatic men who have partners infected with HPV.[7]

Possibly, there was a bias in the statistical analysis of the association between the concept about HPV and knowledge about the purpose of peniscopy in which a significant *p* value was not obtained. This was probably the result of a small number of responses to these two questions together.

Importantly, the guidance on HPV toward men is very relevant due to the high prevalence of this virus in the general population.

The educational intervention on the concept about HPV, human role in the transmission or acquisition of HPV, diseases caused by HPV, and knowledge about peniscopy and its purpose improve the quality of information about the most prevalent DST among men and interfere with men's role in the natural history of infection as transmitters and carriers of the disease.

CONCLUSION

Most of the subjects included in the second study group were aged under 40 years, they came from the capital, had high education level, the income of up to six minimum wages, did not smoke, had drinking habits, and performed penis hygiene.

In relation to sexual behavior, half claimed to use condoms during sexual intercourse, most did not have a previous history of DST and a steady partner, and their partners performed screening tests and demonstrated knowledge of testing results. Most stated taking medications along with partners, started sexual life after the age of 15, and had up to six sexual partners.

The analysis of the association between knowledge about HPV and variables related information, diseases, and virus diagnostics showed similar data in the two groups.

There was an increase in the percentage of those who have heard about HPV and had a correct concept about HPV from the first to the second group among those who knew that men can contract and transmit HPV, those who have a proper concept about HPV, those who know what diseases are caused by HPV, and those who would submit to peniscopy.

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